CHAPTER 4:
DISCUSSION OF, AND RATIONALE FOR, THE MODEL IMPLEMENTATION **PROCEDURE**

The model antidegradation implementation procedure included in Chapter 2 of this document provides an example of how states can address each of the Region's "bottom-line" issues identified in the previous chapter. The model procedure was developed assuming that the applicable state antidegradation policy is identical to the federal policy (see 40 CFR 131.12 or Appendix 1). The Region notes that the various components of the model procedure were patterned after existing state antidegradation procedures that were reviewed in preparing this guidance. Region VIII states are strongly encouraged to base their antidegradation implementation procedures on the model included in Chapter 2. However. it is not a requirement to establish implementation procedures identical to the Region VIII model. States may develop their own modified version of the Region VIII model or a procedure entirely of their own design. The only firm requirement is that antidegradation implementation procedures comply with federal antidegradation requirements and address the issues listed in Chapter 3 in a manner that is consistent with the intent of the state and federal antidegradation policy. The approaches contained in the model procedure are recommended by EPA Region VIII as a means of meeting that requirement.

This chapter of the guidance has two primary purposes. First, the principal features of the Chapter 2 model procedure are highlighted. Second, for a number of significant antidegradation issues (including many of the priority issues itemized in Chapter 3), the approach incorporated into the model procedure is outlined and the rationale for that recommended approach is discussed. In some cases, alternative approaches, such as those reviewed in the Appendix 2 summary of state approaches, are also noted and discussed.

What are the principal features of the Region VIII model implementation procedure?

The model implementation procedure included in Chapter 2 provides an EPA Region VIII-recommended example of how to handle a number of difficult antidegradation implementation issues. For example, the model procedure includes a level of antidegradation protection (referred to as tier 2.5) not currently required or recognized under the federal water quality standards regulation. Including this extra level of protection in state antidegradation programs is not

PRINCIPAL FEATURES OF THE MODEL ANTIDEGRADATION PROCEDURE

TIER 3 Under the model procedure, the primary consideration in identifying ONRW candidates is the overall value of the segment as an aquatic resource, which may derive from scenic, recreational, or ecological attributes (i.e., outstanding water quality is not necessarily required). Different protection requirements are established for sources directly into ONRW segments than for indirect sources that are located upstream of the ONRW segment. New or expanded direct sources may not be authorized regardless of effluent quality.

TIER 2.5 The tier 2.5 requirements are designed to maintain existing water quality, but are more flexible than tier 3 requirements. For example, permanent new or expanded sources that could result in some degradation of an OSRW segment may be allowed in certain cases, provided that the proposed activity serves to maintain or enhance the value, quality, or use of the OSRW. An example would be wastewater treatment plant effluent associated with a state park visitor center.

TIER 2 The emphasis of the tier 2 procedure is on identification and implementation of any reasonable non-degrading or less-degrading alternatives. This is accomplished (in part) by applying tier 2 broadly and by establishing a low threshold by which proposed activities are projected to result in "significant degradation." Minimum requirements for the completion of alternatives analyses are presented. The burden for completing a preliminary evaluation falls on the project applicant. The state must then determine that the applicant's evaluation is adequate and whether any reasonable less-degrading or non-degrading alternatives are available.

TIER 1 The tier 1 procedure presumes that implementation of the water quality criteria established to protect designated uses will also result in protection of existing uses. However, a process to protect existing uses that have more stringent water quality requirements than currently designated uses is included pursuant to 40 CFR 131.12(a)(1).

a requirement at this time. However, a number of states have, on their own initiative, developed an extra tier of protection similar to the one incorporated into Region VIII's model procedure. The extra tier provides an additional way to ensure adequate protection of high quality waters. Region VIII states are encouraged to incorporate a tier 2.5 level of protection into their antidegradation programs.

What is Region VIII's rationale on the major issues?

Region VIII recognizes that, for many of the key antidegradation implementation issues, there is a range of reasonable approaches that are authorized under (or at least not precluded by) the federal water quality standards regulation. This conclusion is supported by the review of existing state approaches presented in Appendix 2 of this guidance. However, to support consistent state implementation of antidegradation requirements, EPA Region VIII believes it may be useful to the states if, on each of the key issues, the Region recommends an approach. It was to serve this basic purpose that the model procedure included in Chapter 2 was developed. In almost every case, the approaches included in the EPA Region VIII model procedure are patterned after those already in use by states. EPA Region VIII strongly recommends that states and tribes base their antidegradation implementation procedures on the Chapter 2 model. Below, the rationale supporting the Region's recommended approaches on major issues is presented.

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Activities Subject to Antidegradation Requirements

A fundamental issue that all states and tribes need to address in their antidegradation implementation procedures is the question of the types of activities that are subject to antidegradation requirements. This issue is critical because of the number and variety of activities that affect water quality. Implementation procedures need to resolve this issue to promote consistent application of antidegradation requirements. Clearly, a wide range of activities that affect water quality may be subject to state antidegradation requirements, and states have considerable flexibility to apply antidegradation broadly.

EPA Region VIII emphasizes that states and tribes may apply their antidegradation requirements to any activity that has the potential to affect existing water quality, and that states and tribes have authority to define broadly the universe of activities subject to antidegradation review requirements. The federal antidegradation requirements do not limit in any way state application of antidegradation requirements to particular categories of activities. At the same time, the

federal water quality standards regulation does not create, nor was it intended to create, state regulatory authority over previously unregulated activities. For this reason states may need to fashion their antidegradation policies and procedures to establish or clarify its authority to address certain activities that the state determines should be subject to antidegradation review requirements (i.e. including those that otherwise would be unregulated). The Region notes that some states have established and successfully applied regulatory controls in a number of areas where federal authority may be limited (e.g. a number of states consider their water quality standards to be directly enforceable). The Region also acknowledges and supports state antidegradation policies which are more stringent than the federal antidegradation policy.

The model implementation procedure uses the term regulated activities to identify the types of projects that would be subject to antidegradation review requirements. (See definition in Chapter 2.) The Region notes that, as described in Chapter 3, antidegradation review requirements must be applied, at a minimum, to such regulated activities. In general, the model procedure would not result in regulation of any activities that are not already regulated under existing surface water quality control programs. The Region believes this approach makes sense given the current status of antidegradation implementation in Region VIII and the widespread resource constraints faced by the state and tribal agencies charged with implementing surface water quality control programs.

The Region notes that antidegradation *principles* can and should affect a number of activities even where application of the antidegradation review requirements is not mandated. As a general planning tool, it always makes sense to consider existing ambient water quality and evaluate available means to protect that water quality. Thus, although a state may not have authority to require a formal antidegradation review or deny a particular category of activity based on its antidegradation requirements, there may still be value in applying the antidegradation principles in an analysis of potential environmental impacts.

Another related point that states need to communicate to project applicants is that, in developing project plans, *antidegradation requirements should be addressed early in the process.* This consideration is particularly important For multi-stage projects where permitting requirements may not be addressed until the later stages. In particular, applicants need to be made aware of the need to identify the tier of antidegradation that would apply and to consider the state's requirements under that tier. In general, applicants need to be made aware that, under antidegradation. the baseline against which impacts will be measured is often not the numeric criterion

applicable to the waterbody segment, but rather the existing ambient quality of the segment. Under tier 2 of antidegradation. for example, activities that would result in "significant degradation" to *existing water quality* would be subject to tier 2 requirements. Consider also that a variety of projects that affect water quality (e.g., NEPA actions requiring an EIS and, ultimately, a permit/water quality certification) are planned and developed over a period of years.[1] Typically, the permit application is not made until near the end of such long-term projects. If antidegradation requirements and the likelihood of impacts to existing water quality are not considered until the permit application is made, the applicant may face a burdensome exercise to demonstrate that the antidegradation policy is satisfied. If, however, the antidegradation requirements had been considered from the beginning, the applicant will avoid having to revisit previously completed water quality and alternatives analyses.

In summary, the Region is requiring that, at a minimum, states apply antidegradation requirements to all activities that are already regulated under surface water quality control programs. However, the basic philosophy of the antidegradation policy is that all *activities that may affect water quality* should be carefully reviewed to determine if alternatives to allowing the degradation exist. Accordingly, states should consider expanding their application of antidegradation requirements to address some of the activities that, although not yet regulated, nevertheless have a profound influence on surface water quality. States should also make an effort to promote consideration of antidegradation requirements as early in the process as is possible (especially where multi-stage projects are initiated that may not be "regulated" until the later stages).

Antidegradation and TMDL Development

In general, antidegradation procedures establish a process for reviewing *individual* proposed activities to determine if the activity can be authorized under state and federal antidegradation requirements. However, under CWA § 303(d), states and EPA are often responsible for developing control strategies for *multiple* as well as individual sources in watersheds where water quality standards are not being achieved (i.e., Total Maximum Daily Loads (TMDLs)). TMDLs are a primary tool used in translating water quality standards into meaningful controls. TMDLs apply to all pollutant sources within a watershed (i.e., both point and nonpoint source). In addition, TMDLs apply to all pollutants, including toxics, conventional pollutants, and sediment. Section 303(d) requires that TMDLs be devel-

[1] Antidegradation should also be considered "up-front" during the long-term planning associated with municipal wastewater treatment facilities.

oped to implement water quality standards - including all numeric, narrative, and antidegradation components.

In the course of developing TMDLs, questions may arise regarding the applicability of antidegradation requirements. For example, consider the case where a project applicant has agreed to implement more stringent controls at an upstream site to compensate for a new or expanded discharge downstream. Such an arrangement will be referred to in this document as upstream/downstream "trading."[1] Where trading occurs, the question becomes whether to apply antidegradation requirements (i.e., under tier 1, 2, or 3) based on the overall impact of the TMDL on water quality or, alternatively, on each individual source included in the TMDL. The latter approach would mandate application of antidegradation wherever a significant new downstream source of a pollutant would be established (i.e.. regardless of the overall effect of the trade on water quality). Under the former approach, antidegradation would not necessarily be applied because, overall, existing water quality would be maintained or improved at all points, at all times, and for all parameters.

The model procedure addresses this issue as follows. Under tier 3, trading may be allowed, but only in segments upstream of the ONRW where the applicant can show that water quality will be either maintained or improved at all points, at all times, and for all parameters. Under tier 2.5, trading may also include new sources of pollutants directly into an OSRW segment, provided that sufficient counterbalancing upstream controls are established to maintain (and improve, it is hoped) the quality of the OSRW segment. Under tier 2, the overall impact of the trade may be considered in judging whether significant degradation will occur. Following this procedure, proposed new or expanded downstream sources may not be judged as significant degradation as long as an appropriate level of counterbalancing upstream controls will be implemented. However, such determinations of significant degradation will be addressed on a case-by-case basis. Under tier 1, trading may be allowed provided that existing uses are fully maintained and protected.

The Region believes that this approach to trading is defensible and sound for a number of reasons. One factor supporting this approach is that the proper focus of antidegradation programs should be on proposed activities that will have an effect on existing water quality.

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[1] Trading is defined as establishing upstream controls to compensate for new or increased downstream sources, resulting in maintained or improved water quality at all points, at all times, and for all parameters. Trading may involve point sources, nonpoint sources, or a combination of point and nonpoint sources. It is presumed that all TMDLs involving trading include an appropriate margin of safety to account for uncertainties in the analysis.

"Trading," as defined in this document, can only result in maintaining or improving water quality. Thus, where trading is implemented in a tier 2 waterbody, the state has the option to conclude that, based on the overall effect on the watershed, significant degradation would not occur (i.e., even where one or more new downstream sources of pollutants would be established). Another factor supporting this approach is that, by applying antidegradation requirements on a broader scale, the regulatory authority can support and stimulate nonpoint source controls that might not otherwise be implemented. EPA Region VIII believes that because nonpoint source pollutant reduction may be more cost-effective than point source pollutant reduction, upstream/downstream trading is a viable and sound approach to establishing watershed-based control approaches and improving water quality.

Proposed Activities Upstream of ONRW Segments

An especially difficult issue related to tier 3 implementation is establishing requirements applicable to new or expanded sources of pollutants that are proposed upstream of an ONRW segment. The model procedure proposes to allow such new or expanded sources where they would have no effect on the quality of the downstream ONRW segment. Implementing this requirement may involve the use of water quality models to determine whether dilution, fate, and transport processes achieve sufficient in-stream reduction of treated wastewater discharges to maintain the quality of the downstream ONRW segment. Available data and best professional judgment must be employed in implementing ONRW requirements in such cases.

The rationale for this approach is that the primary alternative, prohibiting all new or expanded upstream discharges that would result in any increased loading of pollutants, may be too restrictive in many cases. In essence, the Region does not believe that an ONRW designation at the middle or bottom of a watershed should prohibit all upstream new or increased sources, *regardless* of water quality effects on the ONRW segment. In addressing upstream sources, the Region believes it is reasonable and appropriate to first determine whether ONRW quality will be compromised. A second argument supporting the recommended approach is that establishing an effective prohibition of all new or expanded upstream sources, regardless of effects on water quality, would create a strong *disincentive* for designating ONRW segments and providing any antidegradation protection beyond tier 2 requirements. On the other hand. the Region does not believe that prohibiting "measurable" changes in water quality (e.g., as defined by the error associated with the analytical technique utilized) is adequate-

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ly protective because such an approach may allow acute and/or chronic conditions in a waterbody before "measurable" degradation is detected chemically.

Antidegradation and Interstate Water Pollution

A key issue related to implementation of antidegradation is the extent to which the antidegradation requirements of a downstream state apply to proposed activities in upstream states. A recent Supreme Court case *(Arkansas v. Oklahoma* February 26, 1992) addressed this very issue. The case concerned EPA's issuance of an NPDES permit for a new discharge located in Fayetteville, Arkansas, 39 miles upstream from the Oklahoma state line. The proposed Fayetteville discharge was to flow through a series of three creeks over 17 miles, and then enter the Illinois River at a point 22 miles upstream from the Arkansas-Oklahoma border. Oklahoma contested the EPA permit on the grounds that it violated the state's prohibition of new or increased point source discharges to the upper Illinois River.

EPA Region VIII believes that states and tribes should be aware of the results of the *Arkansas v. Oklahoma* case, as this opinion will influence EPA's approach to such interstate cases. In the opinion, which emphasized EPA's discretion, Justice Stevens held that the Clean Water Act clearly authorizes EPA to require that point sources in upstream states not violate water quality standards in downstream states, and that EPA's interpretation of those standards governed. The court upheld as reasonable EPA's interpretation of the Oklahoma standard as prohibiting new sources directly to the Illinois River in Oklahoma and out-of-state sources which had an effect on the Illinois River in Oklahoma. The Region encourages all interested parties to become familiar with the *Arkansas v. Oklahoma* decision, copies of which are available from the EPA Region VIII office, Water Management Division.

Likewise, EPA Region VIII encourages all states and tribes to be aware of the water quality standards applicable to border waters and to involve neighboring states and tribes in its triennial review process for such waters. Cooperative efforts between states and tribes can reduce the potential for conflicts, and also reduce the need for EPA to arbitrate such conflicts pursuant to the Agency's authority.

Defining Temporary and Limited Impacts to ONRWs

Another major issue pertaining to tier 3 implementation is identifying the types of "temporary and limited"[1] impacts that should be

[1] In discussing ONRW requirements, the 1983 water quality standards regulation indicates: "States may allow some limited activities which result in temporary and short-term changes in water quality."

allowed in ONRW segments. The approach reflected in the model implementation procedure is to make such determinations based on a case-by-case evaluation of relevant factors. As a non-binding rule of thumb, activities would be allowed that would result in less than a 5% change in ambient water quality for a period lasting less than one month. However, greater changes in water quality with longer durations could be allowed in specific cases (e.g., where the activity would result in long-term water quality benefit).

The rationale for this approach is that it is impossible to establish a meaningful numerical definition of a "temporary and limited" impact. Such determinations must be made based on site-specific circumstances in order to allow for all possibilities. The Region believes that in some cases, a 15% change in water quality may reasonably be considered a limited impact, while in others a 5% change would not be. Similarly, an impact lasting up to a year or more may in some cases be appropriately considered temporary (e.g., where the long-term best water quality *interests* of the ONRW segment are served). In general, protecting ONRW waters requires that any allowable impacts be as minimal as possible. The Region notes that a Senate report associated with the 1972 CWA amendments, in discussing maintenance of ecological integrity, stated that "...maintenance of such integrity requires that changes in the environment resulting in a physical, chemical, or biological change in a pristine waterbody be of a temporary nature, such that by natural processes, within a few hours, days, or weeks, the aquatic ecosystem will return to a state functionally identical to the original."

Tier 2.5

Tier 2.5 gives a state or tribe the ability to provide an additional level of protection to high quality waters.

The basic issue pertaining to tier 2.5 is whether this level of protection is needed to fully protect the quality of surface waters. Region VIII notes that this level of protection is not required under the federal water quality standards regulation. Incorporating this level of protection is encouraged by EPA Region VIII, however, as an additional means to protect existing high levels of water quality on segments which would not otherwise be designated as ONRW designation. The advantage of tier 2.5, as it is presented by the model implementation procedure, is that it gives a state the ability to provide an additional level of protection to high quality waters. Although the specific implementation requirements associated with tier 2.5 may be customized to reflect the needs of individual states, the Region believes that the tier 2.5 requirements contained in the model procedure establish a useful additional level of protection for high quality waters. States may wish to incorporate a tier 2.5 into their antidegradation programs to provide a supplementary tool with which important state water resources (i.e., which do not qualify for ONRW protection) may be protected.

Region VIII also notes that the basic concept of tier 2.5 originated from state antidegradation programs. A number of states have successfully demonstrated the value of applying this extra level of protection to segments which would not qualify for tier 3 ONRW protection.

Identifying High Quality (Tier 2) Waters

A fundamental issue that must be a primary focus of tier 2 implementation guidance is identifying the waters and/or parameters that are high quality and subject to tier 2 requirements. As discussed in Appendix 2 of this guidance, a variety of state approaches are in use or under development. These approaches basically fall into two categories: (1) waterbody-by-waterbody approaches, and (2) parameter-by-parameter approaches. The approach incorporated into the model implementation procedure is a modified waterbody-by-waterbody approach. The overall quality and value of a segment is judged, based on appropriate factors, to determine whether it is of sufficient high quality to warrant tier 2 protection. The decision can be made either through a rulemaking action (i.e., by the Board or Commission) or during the antidegradation review of a proposed activity. However, the presumption established by the model procedure is that state waters are high quality"

The rationale for this approach is founded in Region VIII's belief that: (1) wherever water quality is better than water quality standards, that assimilative capacity is worthy of protection, and (2) most waterbodies have assimilative capacity for a large number of water quality parameters. Consequently, tier 2 protection should be afforded to most waters. An exception to this presumption would be waters where fishable/swimmable uses are clearly not attained. Another exception would be waters where existing quality is not "better than necessary" to support fishable/swimmable uses (i.e.. assimilative capacity does not exist for the parameters that would be affected by the proposed activity). Such waters are likely to have assimilative capacity for some parameters but, overall, such segments are not high quality and should not be subject to tier 2 requirements. The Region believes that the original intent of antidegradation tier 2 was to maintain and protect the existing quality of high quality *fishable/swimmable waters.* The Region recognizes that there is considerable merit in applying tier 2 wherever assimilative capacity exists (i.e., for a parameter that is to be affected by the proposed activity). However, following such a "parameter-by-parameter" approach could result in application of tier 2 to waters which are not attaining and cannot attain fishable/swimmable goal uses. Thus, the Region believes that the parameter-by-parameter approach does not always focus implementation efforts on truly high quality waters.

Significant Degradation

Another major issue that must be addressed under tier 2 implementation guidance is identifying activities that will result in significant degradation. As discussed in Appendix 2 of this guidance, this is probably the single issue that has resulted in the widest diversity of state approaches. State "significance" tests range from simple to complex, involve qualitative or quantitative measures or both, and often vary depending upon the type of parameter or the accuracy of the analytical method used to measure the parameter. The model implementation procedure establishes a fairly low (qualitative) threshold of "significance." The procedure specifies a number of factors that may be the basis for determining the significance (or insignificance) of the proposed degradation on a parameter-by-parameter basis. The approach relies primarily on best professional judgment, allows for a determination to be made in relatively "data-rich" and "data-poor" situations, and establishes state authority to impose data-collection requirements on the project applicant. Following the model procedure, most regulated activities that would result in increased loadings would be considered to pose significant degradation.

Tests of significance should screen out only those activities that would result in truly insignificant water quality effects.

The rationale for this approach is that only proposed activities that will result in truly minor impacts to existing water quality should be exempted from the tier 2 review requirements. EPA Region VIII believes that tests of significance represent a valuable means of focussing state resources appropriately; however, such tests should not unduly reduce the state's ability to pursue the primary function of tier 2, which is to ensure that non-degrading or less-degrading alternatives are identified and implemented. Establishing a high threshold of significance would run counter to this objective (i.e., because proposed activities which are judged as "insignificant" are not subject to alternatives analysis requirements). Likewise, establishing a rigid quantitative measure of significance can also pose an unnecessary obstacle to evaluation of alternatives because of the technical and resource constraints associated with predicting the in-stream effects of a proposed activity. It is for this reason that the model procedure allows for determinations of significance based on simple analyses such as dilution factors and proposed effluent loadings. It is also for this reason that the significance test may be bypassed entirely where the Division believes that reasonable alternatives to lowering water quality are clearly available. In order to ensure that any non-degrading or less-degrading alternatives are identified and implemented, the Region believes that tests of significance should screen out only those activities that would result in truly insignificant water quality effects. The model procedure includes a low threshold of "significance" so that an evaluation of alternatives will be completed for most proposed activities.

Cumulative Effects

Determining the significance of a proposed activity can be complicated where multiple new or expanded sources in a basin are proposed over a relatively short period of time. Where such new or expanded proposed sources are evaluated separately with respect to antidegradation requirements, it may be possible to reasonably conclude that each individual source would not pose significant degradation. However, taken cumulatively. the degradation resulting from all sources in such cases can be quite significant. Likewise, multiple periodic increases in loadings from a single source can be relatively minor individually but very significant in a cumulative sense.

The model antidegradation procedure addresses this issue by identifying cumulative effects as one of the factors to be considered in evaluating significant degradation. The procedure allows the state to base determinations of significance on the cumulative effects of multiple sources or the cumulative effects of multiple periodic increases from a single source. In either case, further antidegradation review, including evaluation of alternatives, can be required even for individual proposed actions which normally would not be considered significant. Although the Region believes that the emphasis of developing state and tribal programs should, at least initially, be on evaluating proposed sources individually, EPA certainly recommends that states and tribes be alert for cumulative effects and factor such considerations into their antidegradation review process where appropriate.

Permitted versus Existing Effluent Quality

A sub-issue within the overall "significance" question is how states should address reissuance of NPDES permits where existing facility performance is better than the NPDES permit requires. In such cases, reissuing the same permit can be viewed as authorizing degradation (i.e., because the permit would be authorizing the permittee to increase existing loadings to permitted levels). Through the use of a case example, the model procedure explicitly states that reissuing the same permit limits can be treated as significant degradation in certain cases.

The rationale for this approach is that there may be situations in which reissuing the same permit limits should be subjected to further review, including the evaluation of alternatives. For persistent toxics where there are existing downstream accumulation problems in either fish tissue or sediments, there may be a need to base the permit limits of upstream sources on their existing effluent quality. Such "EEQ" based limits ensure that the downstream accumulation problems will not become worse as a result of increased upstream loadings. Reissuing the same permit should also be subject to further review where there may be pollution prevention alternatives that would result in complete elimination of the parameter(s) of con-

cern from the effluent. In either of these situations (and perhaps others), it may be appropriate to consider reissuing the same permit limits as significant degradation.

Data Requirements

A critical issue is the question of the variety, quantity, and quality of data necessary to implement antidegradation tier 2, particularly with respect to identifying which waters are "high quality," and determining the water quality "significance" of proposed activities. Certainly, monitoring and assessing surface water quality is a difficult and ongoing task, and projecting the water quality that will result from proposed activities can be made difficult by the inherent complexity of receiving water systems. The critical issue becomes: How much information and analysis is needed to make the required antidegradation tier 2 findings, and where information is lacking, who should be responsible for providing it? An additional overriding concern is, where information may be lacking, what approach will ensure that water quality is protected and that the fundamental purpose of tier 2 is served?

EPA Region VIII believes that implementation of antidegradation tier 2 requirements need not pose an undue burden on the state and tribal agencies charged with administering surface water quality programs. The model antidegradation procedure included in this guidance has been developed to allow states and tribes to focus resources on significant problems and issues and, where necessary, place the information-gathering burden on the project applicant. With respect to antidegradation tier 2, the Region believes and advocates that, rather than getting unduly "bogged down" with assessing and projecting water quality conditions, state/tribal programs should focus on evaluation of non-degrading and less-degrading alternatives in order to minimize the pollutant loadings that will result from the proposed activity. By focussing on the projected pollutant loadings and costs associated with each available alternative, such alternatives analyses can occur *independent* of the analysis of receiving water quality conditions. The Region believes that evaluation of alternatives is the proper focus of tier 2 reviews, and has developed the model procedure to achieve this focus. To this end, the model procedure:

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(1) includes an initial presumption that all surface waters are high quality and subject to tier 2 review requirements;

(2) allows for basing high quality determinations on ancillary data such as land use information, presence of sources, biological health, etc.;

(3) establishes a low threshold or definition of "significant degradation;"

(4) allows for determinations of significance based on simple analyses and factors which do not require modeling (such as percent change in source loadings);

(5) provides for by-passing the significance test entirely where reasonable alternatives to lowering existing water quality are clearly available; and

(6) allows for the data-gathering burden to be placed on the project applicant with respect to any data that may be needed to make the high quality and significance findings.

Although monitoring and data analyses are critically important to the total maximum daily load (TMDL), wasteload allocation, and NPDES permitting processes, EPA Region VIII believes that implementation of antidegradation tier 2 need not focus on such issues. In fact, the Region believes that undue attention to the high quality and significance questions can be an obstacle to the primary function of a tier 2 program, which is to ensure that the least-degrading reasonable alternative is being implemented.

Determinations of Importance and Necessity

The federal water quality standards regulation requires that the water quality of high quality waters not be lowered unless it is determined that such degradation is *necessary* to accommodate *important* economic and social development.[1] implementing this requirement requires application of a two-part test. The state must find that the proposed activity is important, and the state must find that any associated water quality degradation is necessary (i.e., cannot be avoided by selecting an available alternative). Clearly, there will be many instances where important activities can proceed without degrading water quality. However, it would be inappropriate to assume, once finding that an activity is important, that the associated water quality degradation is necessary.

Given the variety of available engineering approaches and the emerging importance of pollution prevention, EPA Region VIII believes that the finding of necessity is among the most important aspects of a state antidegradation program.

Given the variety of available engineering approaches and the emerging importance of pollution prevention, EPA Region VIII believes that the finding of necessity is among the most important

[1] Note that the findings of necessity and importance are requirements only under tier 2; these findings are not required under the other tiers of an antidegradation program.

aspects of a state antidegradation program. The model procedure addresses evaluation of alternatives by requiring that the applicant prepare an analysis that provides substantive information pertaining to the costs *and* environmental impacts associated with available alternatives.

In evaluating the applicant's analysis, the state must ensure that all feasible alternatives to allowing the degradation have been adequately evaluated by the project applicant. The state may request additional information from the applicant to supplement the initial evaluation. The procedure references the EPA Headquarters guidance regarding the use of economics in the water quality standards program. The state's preliminary finding regarding the *necessity* of the proposed degradation is subjected to public review along with all its other antidegradation review findings. A non-binding rule of thumb is included that specifies that "...non-degrading or less-degrading pollution control alternatives with costs that are less than 110% of the costs of the pollution control measures associated with the proposed activity shall be considered reasonable."

If the Division determines that reasonable alternatives to allowing the degradation do not exist, the Division shall continue with the tier 2 review and document the substance and basis for that preliminary determination using the antidegradation review worksheet (see page 35).

POTENTIAL NON-DEGRADING OR LESS-DEGRADING ALTERNATIVES

- ***pollution prevention/ source reduction measures (e.g., substitution of less toxic substances)***
- ***innovative treatment technology (e.g., land application of wastewater)***
- ***advanced treatment technology***
- ***water recycle or reuse***
- ***process changes***
- ***reduction in scale of the project***
- ***seasonal or controlled discharge options to avoid critical water quality periods***
- ***improved operation and maintenance of existing treatment systems***
- ***alternative discharge locations***

The Region strongly encourages states and tribes to stress the evaluation of alternatives in implementing antidegradation tier 2 requirements. Use of tier 2 to identify and require reasonable and less-degrading (or non-degrading) alternatives can be an effective tool with which to maintain and protect existing water quality. The Region believes that the recommended alternatives analysis procedure provides a workable mechanism with which existing water quality can be protected and strongly advocates that states and tribes emphasize this aspect of the antidegradation program.

Identifying Existing Uses [1]

A major issue related to tier 1 implementation[1] is whether to presume that uses which have been designated for a segment appro-

[1] Note that tier 1 requirements apply to all surface waters.

priately address all existing uses. For example, where a class 2 (habitat-limited) aquatic life use has been designated for a segment, is it appropriate to presume that the existing use is not, in actuality, a class 1 aquatic life use? At first glance, this may seem a reasonable approach because designated uses are required, at a minimum, to be inclusive of attainable uses, and in most cases, existing uses are certainly attainable! However, in some cases water quality may have improved since the designated use was assigned. In other cases, the designated use may have been set based on inadequate information. The approach incorporated into the model implementation procedure is to presume that existing uses are appropriately addressed by designated uses, while also establishing state authority to protect existing uses where this presumption is overcome based on, for example, data that become available from the project applicant or through the public participation and intergovernmental coordination processes.

The basis for this approach is that, although it does not make sense from a management perspective to revisit all previous use designation decisions as part of the antidegradation program, occasionally it may be determined that currently designated uses do not adequately reflect the existing uses of the segment. Where this is determined to be the case, protection of existing uses may require a more stringent level of protection than would normally be associated with the currently designated use. In such cases, federal antidegradation requirements mandate that the more stringent requirements be applied.

Identifying Existing Uses 2

Another tier 1 question is whether to evaluate existing uses following a different or more fully developed hierarchy of uses than is applied in designating uses. For example, should a distinction be made between an existing coldwater *salmonid* fishery versus a coldwater fishery that does not support salmonids? Should proposed activities that would result in fundamental shifts in the aquatic community, without eliminating a designated use, be considered to eliminate an existing use? The model procedure addresses this issue by using the same hierarchy (i.e., degree of precision) for both designated and existing uses. Following this approach, the protection afforded to existing uses is limited by the degree of refinement associated with the state designated uses. States that have more specific designated uses (i.e. including a number of use sub-categories) would thus be able to address more subtle effects on existing uses. States with a less specific designated uses would have less precision associated with their existing use protection scheme.

The rationale for this approach is that a separate use classification system should not be developed for purposes of existing use protection. It is simpler and easier to implement existing use protection by

revisiting the original designated use question, determining whether an existing use is or has been attained since 1975 that has more stringent requirements than the currently designated uses, and implementing controls to protect that existing use as if it were a designated use. To ensure effective protection of existing uses, EPA Region VIII supports further development of state aquatic life designations to provide an appropriate number of sub-categories. Continued use of biological surveys and biological assessment programs will also promote more effective existing use protection.

To ensure effective protection of existing uses, EPA Region VIII supports further development of state aquatic life use classification systems to provide an appropriate number of sub-categories. Continued use of biological surveys and biological assessment programs will also promote more effective existing use protection.

Impacts Not Addressed by the Applicable Water Quality Criteria

A final issue concerns whether antidegradation authorizes states to prohibit impacts to existing uses that may not be adequately or specifically addressed by the water quality criteria which have been established to protect designated uses (e.g., impacts to aquatic life habitat that may result from regulated discharges of clean sediment). The model implementation procedure establishes state authority to address such impacts, but also establishes a presumption that implementation of the applicable water quality criteria will fully protect designated and existing uses.

Due to resource limitations. EPA believes that it makes sense to place priority on implementation of the applicable water quality criteria, and it is for this reason that the model procedure presumes that implementation of such criteria will fully protect designated and existing uses. However, pursuant to state and federal tier 1 requirements, states must protect existing uses against impacts, even where it is not possible to tie such impacts to violations of applicable water quality criteria. For example, where it can be demonstrated that aquatic life habitat would be altered by a (regulated) discharge of clean sediment such that an aquatic life existing use would be impaired, state and federal existing use protection requirements authorize a state to deny such discharges, even where it may not be possible to tie the impact directly to a water quality criterion.